UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P O Box 1450
Alexandria, Virginia 22313-1450
www uspto gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,258	12/15/2003	Sergey Ioffe	0879-0434P	1477

2292 7590 01/06/2009
BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER	
ABDI, AMARA	

ART UNIT	PAPER NUMBER
2624	

NOTIFICATION DATE	DELIVERY MODE
01/06/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/734,258	IOFFE, SERGEY	
	Examiner	Art Unit	
	Amara Abdi	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 01 October 2008.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-32 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-32 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 12/15/2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's response to the last office action, filed October 01, 2008 has been entered and made of record.

2. Applicant's arguments with respect to claims 1 and 17 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. (US PGPUB 2004/0264780) in view of Roderick M. et al. (Nonlinear adaptive control using nonparametric Gaussian process prior models. Copyright © 2002 IFAC).

(1) Regarding claims 1 and 17:

Zhang et al. disclose a method and system (paragraph [0004], line1) for automatically recognizing objects in a digital image, comprising:

accessing digital image data containing an object of interest therein (element 192 in Fig. 1, paragraph [0037], lines 1-5);

detecting an object of interest in said digital image data (element 206 in Fig. 2, paragraph [0004], lines 4-5; and paragraph [0045], lines 1-3); and

applying each extracted feature to a previously-determined additive probability model to determine the likelihood that the object of interest belongs to an existing class of objects (element 202 in Fig. 2, paragraph [0021], lines 6-10, and paragraph [0041], lines 7-15).

normalizing the object of interest to generate a normalized object representations (paragraph [0044], lines 20-25), and

extracting a plurality of features from the normalized object representation (Fig. 8) (paragraph [0044], line 25 and paragraph [0045], lines 1-7)

However, Zhang et al. do not teach explicitly wherein the additive probability model models the objects using a class center and residual components between the objects and the class center, wherein an uncertainty related to the class center is represented by a model associated with the class center.

Roderick M. et al., teach the system, where the additive probability model (Gaussian process priors) (paragraph [3]) models the objects using a class center (mean μ) (paragraph [3], lines 29-30) and residual components between the objects (covariance function) (paragraph [3], lines 30-32), wherein an uncertainty related to the class center (parameters of model such as mean μ) is represented by a model (Gaussian process priors) associated with the class center (parameters of model such as mean μ) (paragraph [1], lines 42-43, and paragraph [3]).

It is desirable to improve the performance of nonlinear adaptive controllers based on nonlinear models, by taking in account the accuracy of the model predictions. The Roderick's approach, where the uncertainty related to the mean and covariance is

represented by Gaussian model is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Roderick M. et al. teaching, where the uncertainty related to the mean and covariance is represented by Gaussian model, with the Zhang et al. teaching, because such feature improves the performance of nonlinear adaptive controllers based on nonlinear models, by taking in account the accuracy of the model predictions (paragraph [1], lines 13-16).

(2) Regarding claims 2 and 18:

The combination Zhang et al. and Roderick M. et al. teaches the parental claims 1 and 17. Furthermore, Roderick M. et al. teach the system, where using the Gaussian model (Roderick: paragraph [3]).

(3) Regarding claims 3 and 19:

The combination Zhang et al. and Roderick M. et al. teaches the parental claims 1 and 17. Furthermore, Zhang et al. teach the method and system (paragraph [0004], line1) comprising:

selecting an existing class for said object of interest based on said likelihood (paragraph [0021], lines 7-8); and re-calculating an additive probability model for the selected class using a feature value of the object of interest (paragraph [0041], lines 8-10), (the recalculating of the additive probability model is read as the same concept as the calculating of additive probability model).

(4) Regarding claims 4 and 20:

The combination Zhang et al. and Roderick M. et al. teaches the parental claims 1 and 17. Furthermore, Zhang et al. teach the method and system (paragraph [0004],

line1), where the object of interest is a face (paragraph [0004], lines 4-7) and the method performs face recognition (paragraph [0017], line 1).

(5) Regarding claims 5 and 21:

The combination Zhang et al. and Roderick M. et al. teaches the parental claims 1 and 17. Furthermore, Zhang et al. teach the method and system (paragraph [0004], line1), where the object of interest is a face (paragraph [0004], lines 4-7), and the method performs face verification (paragraph [0017], line 1) based on said likelihood (paragraph [0041], lines 9-10).

(6) Regarding claims 6 and 22:

The combination Zhang et al. and Roderick M. et al. teaches the parental claims 1 and 17. Furthermore, Zhang et al. teach the method and system (paragraph [0004], line1), where the object of interest is a face (paragraph [0004], lines 4-7), and the step of detecting an object of interest detects facial features in the digital image data (paragraph [0043], lines 1-4).

(7) Regarding claims 7 and 23:

The combination Zhang et al. and Roderick M. et al. teaches the parental claims 6 and 22. Furthermore, Zhang et al. teach the method and system (paragraph [0004], line1), where the step of detecting an object of interest utilizes early rejection to determine that an image region does not correspond to a facial feature (paragraph [0021], lines 16-18), (the use of marginal probability is read as the early rejection).

<u>(8) Regarding claims 8 and 24:</u>

The combination Zhang et al. and Roderick M. et al. teaches the parental claims 1 and 17. Furthermore, Zhang et al. teach the method and system (paragraph [0004], line1), where the object of interest is a face (paragraph [0004], lines 4-7) in a digital photo (paragraph [0042], lines 3-4; and paragraph [0043], lines 1-4).

<u>(9) Regarding claims 9 and 25:</u>

The combination Zhang et al. and Roderick M. et al. teaches the parental claims 1 and 17. Furthermore, Zhang et al. teach the method and system (paragraph [0004], line1), comprising:

generating an additive probability model for each of a plurality of classes based on feature values for objects belonging to said classes (paragraph [0021], lines 7-10).

<u>(10) Regarding claims 10 and 26:</u>

The combination Zhang et al. and Roderick M. et al. teaches the parental claims 9 and 25. Furthermore, Zhang et al. teach the method and system (paragraph [0004], line1), where the step of generating an additive probability model for a particular class is repeated each time a detected object of interest is added to the corresponding class (paragraph [0021], lines 7-10), (the repeating of an additive probability model is read as the concept as the additive probability applied in the first step).

<u>(11) Regarding claims 11 and 27:</u>

The combination Zhang et al. and Roderick M. et al. teaches the parental claims 9 and 25. Furthermore, Zhang et al. teach the method and system (paragraph [0004], line1), where the step of generating an additive probability model clusters examples

belonging to a single class (paragraph [0021], lines 2-6) so as to generate multiple additive probability models for each class identity (paragraph [0021], line 9), (it is read that the probabilities are modeled for each class identity).

(12) Regarding claims 12 and 28:

The combination Zhang et al. and Roderick M. et al. teaches the parental claims 9 and 25. Furthermore, Zhang et al. teach the method and system (paragraph [0004], line1), where the step of generating an additive probability model computes a posterior distribution for a feature value mean from at least one example feature value (paragraph [0083], lines 4-14).

(13) Regarding claims 13 and 29:

The combination Zhang et al. and Roderick M. et al. teaches the parental claims 12 and 28. Furthermore, Zhang et al. teach the method and system (paragraph [0004], line1), where the additive probability model models variance of said feature value mean (paragraph [0017], lines 14-17), (the variance is read as the same concept as the estimate density).

(14) Regarding claims 14 and 30:

The combination Zhang et al. and Roderick M. et al. teaches the parental claims 13 and 29. Furthermore, Zhang et al. teach the method and system (paragraph [0004], line1), where the variance of the feature value mean approaches zero as more examples are associated with the corresponding class (paragraph [0071], lines 4-7), (the variance is read as the same concept as the estimate density).

(15) Regarding claims 16 and 32:

The combination Zhang et al. and Roderick M. et al. teaches the parental claims 1 and 17. Furthermore, Zhang et al. teach the method and system (paragraph [0004], line1), where the digital image data represents a digital photo (paragraph [0042], lines 3-4).

5. Claims 15 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. and Roderick M. et al., as applied to claims 1 and 17, and further in view of Bradshaw (US PGPUB 2002/0122596).

The combination Zhang et al. and Roderick M. et al. teach the parental claims 1 and 17. However, the combination Zhang et al. and Roderick M. et al. do not teach explicitly the executing of a training stage to identify a set of independent features that discriminate between classes.

Bradshaw, in analogous environment, teaches hierarchical, probabilistic, localized, semantic image classifier, where executing a training stage to identify a set of independent features that discriminate between classes (paragraph [0106], line 1-2; and line 6-8).

It is desirable to have the most cost effective and efficient image retrieval approach available. The Bradshaw's approach, where executing a training stage to identify a set of independent features that discriminate between classes is to achieve this goal. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention, to apply the Bradshaw teaching, where executing the training

stage to identify a set of independent features that discriminate between classes, with the combination Zhang et al. and Roderick M. et al., because such feature has the most cost effective and efficient image retrieval approach available (paragraph [0006], line 5-6)

Contact Information:

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amara Abdi whose telephone number is (571)270-1670. The examiner can normally be reached on Monday through Friday 8:00 Am to 4:00 PM E.T..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jingge Wu/
Supervisory Patent Examiner, Art Unit 2624

/Amara Abdi/
Examiner, Art Unit 2624